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A.D. 1841 . . . . N° 8843.

Extract of Hops.

NEWTON'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, William Edward Newton, of the Office for Patents, 66, Chancery Lane, in the County of Middlesex, Mechanical Draftsman, send greeting.

WHEREAS Her present most Excellent Majesty Queen Victoria, by Her Royal Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Fifteenth day of February, in the fourth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said William Edward Newton, Her especial licence, full power, sole privilege and authority, that I, the said William Edward Newton, my executors, administrators, and assigns, and such others as I, the said William Edward Newton, my executors, administrators, or assigns, should at any time agree with, and no others, from time to time and at all times during the term of years therein mentioned, should and lawfully might make, use, exercise, and vend, within England, Wales, and the Town of Berwick-upon-Tweed, and also in all Her Majesty's Colonies and Plantations abroad, an Invention of "Improvements in Obtaining a Concentrated Extract of Hops, which the Inventor denominates 'Humuline'" being a communication made to me by Henry Frederick Smoll, of Paris; in which said Letters Patent is contained a proviso, obliging me, the said William Edward Newton, by an instrument in writing under my hand and seal, particularly to describe and ascertain the nature of the said Invention, and in what manner the same is to be performed, and to cause the same to be inrolled in Her Majesty's High Court of Chancery within six calendar months next and immediately after the date of the said in part recited Letters Patent, as in and by the same, reference being thereunto had, will more fully and at large appear.

NOW KNOW YE, that in compliance with the said proviso, I, the said William Edward Newton, do hereby declare that the nature of the said Inventon, and the manner in which the same is to be performed, is particularly described and ascertained in and by the following description thereof (that is to say) :—

This Invention of improvements in obtaining a concentrated extract of hops consists in submitting the plant called the hop (humulus lupulus) to a certain process, by means of which the extract or essence of the plant is obtained in a better and more perfect manner than when boiled up with wort in the manufacture of beer, as is at present the case. By means of the process hereafter described (and which may be divided into parts), two separate and distinct products are obtained, one being the essential oil of the resin (the resinous or spirituous tincture), the other is the "extract," which is a gummy or aqueous decoction of the plant. These products are obtained in the following manner :—

DESCRIPTION OF THE PROCESS.

The hops are dried in a stove or oven heated to about 86° of Fahrenheit's thermometer, and when brittle or friable they must be rubbed or passed through a sieve, the meshes of which are not more than the tenth of an inch wide. The coarse powder is then placed in a closed cylinder, called, by the Inventor, the displacing cylinder. As much alcohol is then poured into the cylinder as the powder will absorb, and a further quantity supplied until a layer of about an inch and a half deep covers the powder. The contents of the cylinder are then submitted to a considerable pressure, and allowed to remain in this state for about twenty-four hours, after which time the alcoholic tincture may be draw off into a tub or other vessel. The alcohol is washed out of the contents of the cylinder by adding water thereto until the liquor which runs out of the cock becomes clear and colourless. The same water is again added to the contents of the cylinder, and the hops are macerated in it for the space of forty-eight hours; after this maceration the liquor is drawn off, and the hops again washed with fresh supplies of water, in order that no extract may be allowed to remain. By this means the following products are obtained, (viz^{t}) :— The *alcoholic tincture*, holding in solution the *essential oil*, and also the *ordinary decoction*, dissolved or held in solution by water. These three distinct products, (viz^{t}), the alcoholic tincture, the essential oil, and the ordinary decoction or watery extract, may be united into one homogenous mass, and effected in the following manner :—The alcoholic tincture and essential oil are placed in a suitable vessel, and subjected to the action of a water bath (balneum mariæ), which must be furnished with a still-head, and submitted to the process of distillation in order to drive off the alcohol, which by this means is obtained perfectly colourless and limped; and, as such is the case, it proves that all the essential oil remains in the preparation or residuum, which is a brownish yellow resin, covered with a layer of yellowish liquor some inches in depth, and composed of a watery extract. The aqueous decoction, to which is added the above watery extract, which floats on the surface of the resin is then evaporated by an open fire until it becomes of the consistance of a syrup, and then it is removed to the water bath and evaporated until it becomes a nearly solid extract. This extract, which is about the colour of chocolate, and of the agreeable bitter taste, the characteristic of hops, is mixed with the resin, which has been previously softened or melted by means of the water bath. By this method of preparing the hop about thirty-two to thirty-four per cent. of extract is obtained from good hops, and all that the plant contains of those substances necessary for the manufacture of beer is drained out or otherwise obtained, the residue having neither taste nor smell; and no further decoction or extract can be obtained even by boiling for a considerable time. The humuline, when prepared in this manner, assumes the form of a nearly solid extract, of a blackish brown colour, with a pungent smell similar to the hop, the taste being at first bitter, and afterwards of an acrid taste. In order to preserve the humuline it must be softened or melted by the application of heat, and poured into tin or earthen vessels previously well dried. It must be then left to cool, gradually, and a small quantity of alcohol poured on to the surface, just sufficient to cover it. Upon allowing this small quantity of alcohol to evaporate the surface of the humuline in the vessel will be covered with a thin coating, film, or skin, which, as long as it remains unbroken, will effectually prevent the humuline from becoming mouldy or otherwise injured by exposure to the air. When the humuline is required for the manufacture of beer a sufficient quantity of the *gummy extract* is taken from the vessel containing the same, and is placed in an earthen vessel, and to every two pounds of the extract add about one pint and a half of hot water; then place the earthen vessel in a water bath in order to dissolve the gummy extract. The *resinous extract* is to be dissolved in a small quantity of alcohol, and when the two solutions are once quite limpid they are to be mixed, and added to the wort at any moment required. The humuline is added to the beer in about the following proportions:—Two pounds weight of humuline in place of six pounds weight of common hops. If the two extracts are not previously mixed, the brewer may at his discretion mix them in any proportion that may be required, as it is well known that when the resinous extract is added in two great quantities it gives a disagreeable acridity to the beverage.

I also obtain a valuable extract from hops by placing them, either in a pulverized or whole state, in a closed cylinder, and submitting them to the action of steam, either under considerable pressure or at the mean pressure of the atmosphere; and, by the partial condensation of the steam which will take place, a liquid extract of hops is obtained, the watery particles of which may, if required, be evaporated to the same consistence as the humuline, and preserved in a similar manner.

I will now proceed to point out some of the principle advantages which will result from the employment of the humuline. The first advantage is *economy,* as, by employing the humuline, the brewer obtains from fifteen to twenty per cent. more of the hop than when employing the plant itself and boiling it in the wort. This will be easily understood by persons practically acquainted with the process of brewing, as it is an acknowledged fact that even after hops have been boiled in the wort for some hours they contain (when taken out of the boiler) a considerable quantity of essence, which is ultimately lost; and besides this loss, there is another which must by no means be overlooked, namely, the loss by evaporation, as during the long process of boiling a great portion of the essential oil and aroma of the hop is driven off and wasted; whereas, when the humuline is employed it need not be boiled more than twenty minutes. Another advantage is the superior quality of beer which is produced by employing the humuline in place of the ordinary hop. The next advantage is the practicability of the brewer availing himself of a good crop of hops, as he may buy a large quantity when they are good and the market is overstocked; and, by reducing them to humuline, he is enabled to keep them any length of time without being liable to spoil, as is the case when the plant is kept longer than a year. A further advantage consists in the small space which the essence or useful qualities of this plant occupies, thus rendering it eligible for sea voyages, in which it would be extremely useful for making beer, and as a remedy against scurvy. There are many other advantages resulting from its use, but it is not necessary to mention them here.

Having now described the Invention communicated to me, and the manner in which the same is to be carried into effect, I wish it to be understood that I claim the methods above described of making or producing a concentrated extract of hops.

In witness whereof, I, the said William Edward Newton, have hereunto set my hand and seal, this Eleventh day of August, in the year of our Lord One thousand eight hundred and forty-one.

WILLIAM E. (L.S.) NEWTON.

AND BE IT REMEMBERED, that on the same Eleventh day of August, in the year above mentioned, the aforesaid William Edward Newton came before our Lady the Queen in Her Chancery, and acknowledged the Specification aforesaid, and all and every thing therein contained, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute in that case made and provided.

S. Duckworth.

Inrolled the Fourteenth day of August, in the year above written.

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